Generalized Rackett-type correlations to predict the density of saturated liquids and petroleum fractions.

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Abstract

Two new generalized correlations for the prediction of satd. liq. densities at temps. between the triple point and the crit. point are presented. The correlations use pure component parameters which are commonly available: the crit. properties, the mol. wt., and the normal boiling temp. The correlations have been tested for many substances including polar and non-polar fluids, and org. and inorg. compds. Results are compared to predictions by other generalized correlations and to exptl. data from the literature. The proposed equations predict the d. of satd. liqs. within 3% deviation for most fluids, and with a max. deviation of 5%. This accuracy is better than that obtained with other available generalized correlations. Another advantage of the new correlations is that they are generalized in terms of pure component properties readily available in the literature for most substances. It is also shown than the proposed correlations give good predictions of liq. d. of petroleum fractions.